

In the Claims:

Please cancel claim 1 without prejudice.

Please amend claims 2, 4-6, 8-10, 12-15, 17, and 19-20 as follows:

1. canceled

2. (currently amended) A robot-based automation system as recited in claim 4 further includes a Dewar container; said Dewar container including an ice control system.

3. (original) A robot-based automation system as recited in claim 2 wherein said Dewar container includes liquid nitrogen flow control.

4. (currently amended) A robot-based automation system as recited in claim 1 wherein for cryogenic crystal sample mounting, for example, for use of cryogenic crystal sample mounting in the x-ray crystallography station at an x-ray source, said robot-based automation system comprising:

a robot arm;

a handset carried by said robot arm;

said handset including a pair of elongated fingers for sample mounting,

said handset includes including a liquid nitrogen reservoir; said reservoir carried by one of said elongated fingers; and

each finger carrying a set of strain gauge arrays for providing force sensing.

5. (currently amended) A robot-based automation system as recited in claim
4 4 wherein said liquid nitrogen reservoir includes a check valve for filling said reservoir
with liquid nitrogen and a pin hole for providing a nitrogen jet flow during the sample
mounting and retrieval.

6. (currently amended) A robot-based automation system as recited in claim
4 4 further includes a miniature mounting sample holder; said miniature mounting
sample holder includes a base member and a support member; said base member and
said support member having cooperating features for precision positioning together.

7. (original) A robot-based automation system as recited in claim 6 wherein
said base member includes a plurality of enlarged recesses surrounding openings
spaced apart around said base member.

8. (currently amended) A robot-based automation system as recited in claim
4 4 wherein said set of strain gauge arrays includes three strain gauge arrays bonded
at a predefined area of each said finger.

9. (currently amended) A robot-based automation system as recited in claim
4 4 wherein each of said strain gauge arrays has a temperature compensating bridge
sensing circuit configuration.

10. (currently amended) A robot-based automation system as recited in claim
+ 4 wherein said set of strain gauge arrays is used for detecting contact force intensity
and direction for each said finger.

11. (currently amended) A robot-based automation system as recited in claim
+ 4 wherein said set of strain gauge arrays is used for providing a precise gripping
action for each said finger.

12. (original) A robot-based automation system as recited in claim 11 wherein
said set of strain gauge arrays is used for providing feedback results of said precise
gripping action for each said finger.

13. (currently amended) A robot-based automation system as recited in claim
+ 4 wherein said robot arm has six-degree of freedom.

14. (currently amended) A robot-based automation system as recited in claim
+ 4 includes a robot arm controller coupled to said robot arm.

15. (currently amended) A robot-based automation system as recited in claim
+ 4 includes a triangular shaped sample magazine for containing a plurality of
samples.

16. (original) A robot-based automation system as recited in claim 15 includes a
plurality of said triangular shaped sample magazine.

17. (currently amended) A robot-based automation system as recited in claim
4 4 includes a controller computer coupled to said robot arm and said set of strain
gauge arrays.

18. (original) A robot-based automation system as recited in claim 17 includes a
video camera coupled to said controller computer.

19. (currently amended) A robot-based automation system as recited in claim
4 4 includes a Dewar container including an ice control system coupled to said
controller computer.

20. (currently amended) A method for cryogenic crystal sample mounting in a
robot-based automation system, said method comprising the steps of:

providing a handset carried by a robot arm;
mounting the sample with a pair of elongated fingers of said handset, and
including a liquid nitrogen reservoir with said handset; said reservoir carried by
one of said elongated fingers; and

sensing force of each finger with a set of strain gauge arrays carried by each of
said elongated fingers for force sensing.